INSTALLATION MANUAL

SPLIT SYSTEM Air Conditioners

MODELS
Ceiling-mounted Cassette type (Multi flow model)

FCQ18PVJU
FCQ24PVJU
FCQ30PVJU

English

Français

Español

Read these instructions carefully before installation.
Keep this manual in a handy place for future reference.
This manual should be left with the equipment owner.

Lire soigneusement ces instructions avant l'installation.
Conserver ce manuel à portée de main pour référence ultérieure.
Ce manuel doit être donné au propriétaire de l'équipement.

Lea cuidadosamente estas instrucciones antes de instalar.
Guarde este manual en un lugar a mano para leer en caso de tener alguna duda.
Este manual debe permanecer con el propietario del equipo.

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1. SAFETY CONSIDERATIONS

Please read these “SAFETY CONSIDERATIONS” carefully before installing air conditioning equipment and be sure to install it correctly. After completing the installation, make sure that the unit operates properly during the start-up operation. Please instruct the customer on how to operate the unit and keep it maintained.
Also, inform customers that they should store this installation manual along with the operation manual for future reference.
This air conditioner comes under the term “appliances not accessible to the general public”.
Meaning of danger, warning, caution and note symbols.

⚠ **DANGER**..... Indicates an imminently hazardous situation which,if not avoided, will result in death or serious injury.

⚠ **WARNING**..... Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION**..... Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be sued to alert against unsafe practices.

⚠ **NOTE** ..... Indicates situation that may result in equipment or property-damage-only accidents.

⚠ DANGER

- **Do not ground units to water pipes, telephone wires or lightning rods because incomplete grounding could cause a severe shock hazard resulting in severe injury or death, and to gas pipes because a gas leak could result in an explosion which could lead to severe injury or death.**
- **Do not install unit in an area where flammable materials are present due to risk of explosion resulting in serious injury or death.**
- **Refrigerant gas in heavier than air and displaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**
- **If the refrigerant gas leaks during installation, ventilate the area immediately.**
  Refrigerant gas may produce toxic gas if it comes in contact with fire such as from a fan, heater, stove or cooking device. Exposure to this gas could result in severe injury or death.
- **After completing the installation work, check that the refrigerant gas does not leak.**
  Refrigerant gas may produce toxic gas if it comes in contact with fire such as from a fan, heater, stove or cooking device. Exposure to this gas could result in severe injury or death.
- **Safely dispose of the packing materials.**
  Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries. Tear apart and throw away plastic packaging bags so that children will not play with them. Children playing with plastic bags face the danger of death by suffocation.

⚠ WARNING

- **Ask your dealer or qualified personnel to carry out installation work. Do not try to install the unit by yourself.**
  Improper installation may result in water leakage, electric shocks or fire.
- **Perform installation work in accordance with this installation manual.**
  Improper installation may result in water leakage, electric shocks or fire.
- **Be sure to use only the specified accessories and parts for installation work.**
  Failure to use the specified parts may result in water leakage, electric shocks, fire or the unit falling.
- **Install the air conditioner on a foundation strong enough to withstand the weight of the unit.**
  A foundation of insufficient strength may result in the equipment falling and causing injuries.
- **Carry out the specified installation work after considering strong considering winds, typhoons or earthquakes.**
  Improper installation work may result in the equipment falling and causing accidents.
- **Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local laws and regulations and this installation manual.**
  An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.
- **Make sure that all wiring is secured, the specified wires are used, and no external forces act on the terminal connections or wires.**
  Improper connections or installation may result in fire.

- **When wiring the power supply and connecting the remote controller wire and transmission wire, position the wires so that the control box lid can be securely fastened.**
  Improper positioning of the control box lid may result in electric shocks, fire or the terminals overheating.
- **Before touching electrical parts, turn off the unit.**
- **Do not touch the switch with wet fingers.**
  Touching a switch with wet fingers can cause electric shock.
- **Be sure to install an earth leakage breaker.**
  Failure to install an earth leakage breaker may result in electric shocks, or fire.
- **Do not install the air conditioner in the following locations:**
  (a) where a mineral oil mist or an oil spray or vapor is produced, for example in a kitchen
  Plastic parts may deteriorate and fall off or result in water leakage.
  (b) where corrosive gas, such as sulfurous acid gas, is produced
  Corroding copper pipes or soldered parts may result in refrigerant leakage.
  (c) near machinery emitting electromagnetic waves
  Electromagnetic waves may disturb the operation of the control system and result in a malfunction of the equipment.
  (d) where flammable gases may leak, where there are carbon fiber or ignitable dust suspensions in the air, or where volatile flammables such as thinner or gasoline are handled.
  Operating the unit in such conditions may result in fire.
- **Heat exchanger fins are sharp to cut.**
  To avoid injury wear gloves to cover the fins when working around them.
- **Refrigerant pipes may be very hot or very cold during or immediately after operation.**
  Touching them could result in burns or frostbite. To avoid injury give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.

⚠ CAUTION

- **While following the instructions in this installation manual, install drain pipe in order to ensure proper drainage and insulate pipe in order to prevent condensate.**
  Improper drain pipe may result in water leakage and property damage.
- **Be very careful about product transportation.**
  Some products use PP bands for packaging. Do not use any PP bands for a means of transportation. It is dangerous.
- **Safely dispose of the packing materials.**
  Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries.
  Tear apart and throw away plastic packaging bags so that children will not play with them. If children play with a plastic bag which was not torn apart, they face the risk of suffocation.
- **Do not turn off the power immediately after stopping operation.**
  Always wait at least 5 minutes before turning off the power. Otherwise, water leakage and trouble may occur.
- **Make sure to provide for adequate measures in order to prevent that the outdoor unit be used as a shelter by small animals.**
  Small animals making contact with electrical parts can cause malfunctions, smoke or fire. Please instruct the customer to keep the area around the unit clean.

⚠ NOTE

- **Install the indoor and outdoor units, power supply wire and transmission wire at least 3.5ft. away from televisions or radios in order to prevent image interference or noise.**
  (Depending on the radio waves, a distance of 3.5ft. may not be sufficient enough to eliminate the noise.)
- **Remote controller (wireless kit) transmitting distance can result shorter than expected in rooms with electronic fluorescent lamps. (inverter or rapid start types)**
  Install the indoor unit as far away from fluorescent lamps as possible.
- **In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.**
- **Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts, should be done in accordance with the relevant local and national regulations.**

2. BEFORE INSTALLATION

- **When moving the unit while removing it from the packing case, be sure to lift it by the four hanger brackets. Avoid putting any pressure on other parts especially the refrigerant piping.**
- Be sure to check the type of R410A refrigerant to be used before installing the unit. (Using an incorrect refrigerant will prevent normal operation of the unit.)
- The accessories needed for installation must be retained in your custody until the installation work is completed. Do not discard them!
- Decide upon a line of transport.
- Leave the unit inside its packaging while moving, until reaching the installation site. Where unpacking is unavoidable, use a sling of soft material or protective plates together with a rope when lifting, to avoid damage or scratches to the unit.
- When moving the unit at or after opening, hold the unit by the hanger brackets (× 4). Do not apply force to the refrigerant pipe, drain pipe or plastic parts.
- For the installation of an outdoor unit, refer to the installation manual attached to the outdoor unit.
- Do not install or operate the unit in rooms mentioned below.
  - **Laden with mineral oil, or filled with oil vapor or spray like in kitchens. (Plastic parts may deteriorate which could eventually cause the unit to fall out of place, or could lead to leaks.)**
  - **Where corrosive gas like sulfurous gas exists. (Copper tubing and brazed spots may corrode which could eventually lead to refrigerant leaks.)**
  - **Where machines can generate electromagnetic waves. (Control system may malfunction.)**
  - **Where the air contains high levels of salt such as that near the ocean and where voltage fluctuates greatly such as that in factories. Also in vehicles or vessels.**

- This unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment.
  If installed as a household appliance it could cause electromagnetic interference.

⚠ WARNING

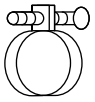
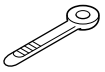
- Entrust installation to the place of purchase or a qualified person. Improper installation could lead to leak and, in worse cases, electric shock of fire.
- Use of unspecified parts could lead to the unit falling, leaks and, in worse cases, electric shock or fire.

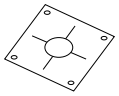
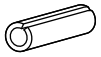
⚠ NOTE

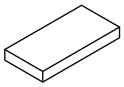
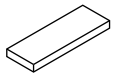
- Be sure to read this manual before installing the indoor unit.
- Be sure to mount an air filter (part to be procured in the field) in the suction air passage in order to prevent water leaking, etc.

2-1 ACCESSORIES

Check the following accessories are included with your unit.

Name	(1) Drain hose	(2) Metal clamp	(3) Washer for hanger bracket	(4) Clamp
Quantity	1 pc.	1 pc.	8 pcs.	4 pcs.
Shape				

Name	(5) Paper pattern for installation	(6) Screws (M5)	(7) Washer fixing plate	Insulation for fitting
Quantity	1 pc.	4 pcs.	4 pcs.	1 each
Shape	Also used as packing material 	For paper pattern for installation		 (8) for gas pipe (9) for liquid pipe

Name	Sealing pad		(Other)
Quantity	1 each	2 pcs.	
Shape	 (10) Large  (11) Medium	(12) Small	• Installation manual • Operation manual

2-2 OPTIONAL ACCESSORIES

- The optional decoration panel and remote controller are required for this indoor unit.

Table 1

Model	Optional decoration panel	
	Color	White
FCQ18 · 24 · 30PVJU	BYC125K-W1	

Table 2

Remote controller	
Wired type	BRC1C71
Wireless type	BRC7C812

FOR THE FOLLOWING ITEMS, TAKE SPECIAL CARE DURING CONSTRUCTION AND CHECK AFTER INSTALLATION IS FINISHED.

a. Items to be checked after completion of work

Items to be checked	If not properly done, what is likely to occur.	Check
Are the indoor and outdoor unit fixed firmly?	The units may drop, vibrate or make noise.	
Is the gas leak test finished?	It may result in insufficient cooling.	
Is the unit fully insulated?	Condensate water may drip.	
Does drainage flow smoothly?	Condensate water may drip.	
Does the power supply voltage correspond to that shown on the name plate?	The unit may malfunction or the components burn out.	
Are wiring and piping correct?	The unit may malfunction or the components burn out.	
Is the unit safely grounded?	It may result in electric shock.	
Is wiring size according to specifications?	The unit may malfunction or the components burn out.	
Is something blocking the air outlet or inlet of either the indoor or outdoor units?	It may result in insufficient cooling.	
Are refrigerant piping length and additional refrigerant charge noted down?	The refrigerant charge in the system is not clear.	

b. Items to be checked at time of delivery

Also review the “1. SAFETY CONSIDERATIONS”

Items to be checked	Check
Did you explain about operations while showing the operation manual to your customer?	
Did you hand the operation manual over to your customer?	

2-3 NOTE TO INSTALLER

- Be sure to instruct customers how to properly operate the unit (especially cleaning filters, operating different functions, and adjusting the temperature) by having them carry out operations themselves while looking at the manual.

3. SELECTING INSTALLATION SITE

Please attach additional thermal insulation material to the unit body when it is believed that the relative humidity in the ceiling exceeds 80%. Use glass wool, polyethylene foam, or similar with a thickness of 3/8 in.. or more as thermal insulation material.

(1) Select an installation site where the following conditions are fulfilled and that meets with your customer’s approval.
- In the upper space (including the back of the ceiling) of the indoor unit where there is no possible dripping of water from the refrigerant pipe, drain pipe, water pipe, etc.
- Where optimum air distribution can be ensured.
- Where nothing blocks the air passage.

- Where condensate can be properly drained.
- Where the false ceiling is not noticeably on an incline.
- Where sufficient clearance for maintenance and service can be ensured.
- Where piping between indoor and outdoor units is possible within the allowable limit. (Refer to the installation manual of the outdoor unit.)

⚠ DANGER

- Do not install unit in an area where flammable materials are present due to the risk explosion resulting in serious injury or death.

⚠ WARNING

- If the supporting structural members are not strong enough to take the unit's weight, the unit could fall out of place and cause serious injury.

⚠ NOTE

- Install the indoor and outdoor units, power supply wire and connecting wires at least 3.5ft. away from televisions or radios in order to prevent image interference or noise. (Depending on the radio waves, a distance of 3.5ft. may not be sufficient enough to eliminate the noise.)

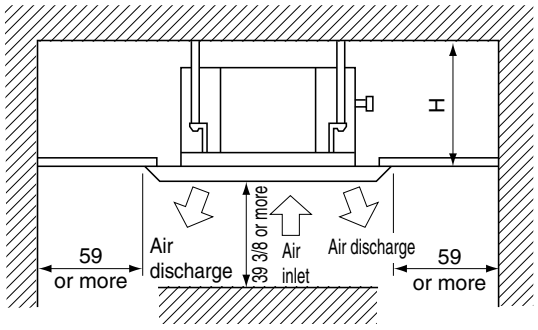
(2) Ceiling height

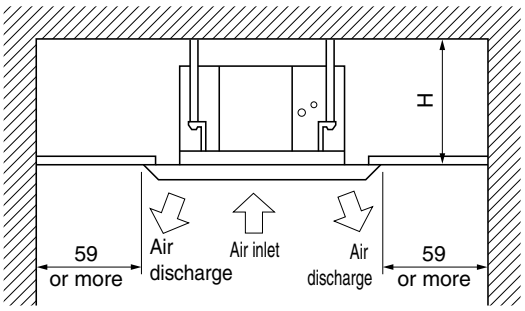
This indoor unit may be installed on ceilings up to 10.5 ft. in height.

(3) Use suspension bolts for installation. Check whether the ceiling is strong enough to support the weight of the unit or not. If there is a risk, reinforce the ceiling before installing the unit.

(Installation pitch is marked on the paper pattern for installation. Refer to it to check for points requiring reinforcing.)

[Space required for installation]



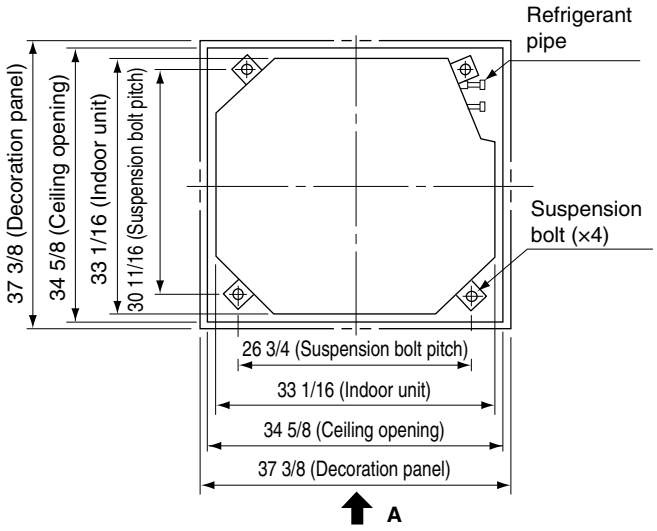


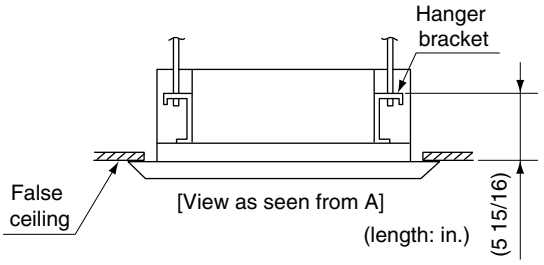
Model	H
FCQ18 · 24 · 30PVJU	11 3/4 or more

(length: in.)

4. PREPARATIONS BEFORE INSTALLATION

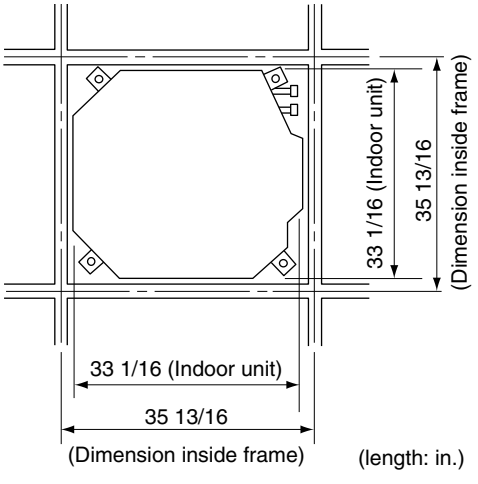
(1) Relation of ceiling opening to unit and suspension bolt position

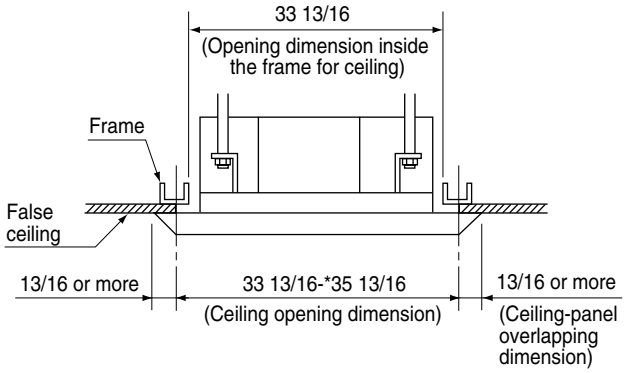


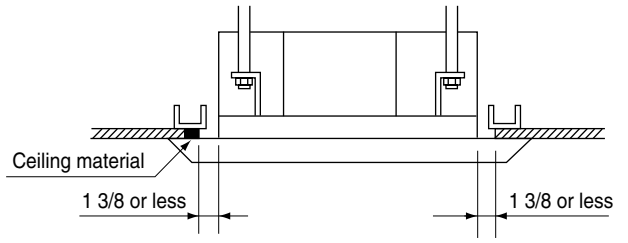


■ Installation is possible when ceiling opening dimensions is as follows.

- When installing the unit within the frame for fixing false ceiling.







(length: in.)

NOTE) Installation is possible with a ceiling dimension of 35 13/16 in. (marked with *). However, to achieve a ceiling-panel overlapping dimension of 13/16 in., the spacing between the ceiling and the unit should be 1 3/8 in. or less. If the spacing between ceiling and the unit is over 1 3/8 in., attach false ceiling to ■ part or recover the ceiling.

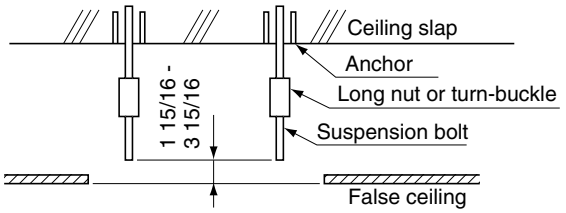
(2) Make the ceiling opening needed for installation where applicable. (For existing ceilings)

- Refer to the paper pattern for installation (5) for ceiling opening dimensions.
- Create the ceiling opening required for installation. From the side of the opening to the casing outlet, implement the refrigerant and drain pipe and remote controller wire (unnecessary for wireless type) and indoor-outdoor unit casing outlet. Refer to the “REFRIGERANT PIPING WORK (Page 7), DRAIN PIPING WORK (Page 8) and ELECTRIC WIRING WORK (Page 9)”.
- After making an opening in the ceiling, it may be necessary to reinforce ceiling beams to keep the ceiling level and to prevent it from vibrating. Consult the builder for details.

(3) Install the suspension bolts.
(Use either a W3/8 or M10 size bolt)

Use a hole-in anchor for existing ceilings, and a sunken insert, sunken anchor or other field supplied parts for new ceilings to reinforce the ceiling to bear the weight of the unit. Adjust clearance from the ceiling before proceeding further.

〈 Installation example 〉



NOTE) All the above parts are field supplied.

(length: in.)

5. INSTALLATION PROCEDURES FOR FRESH AIR INTAKE DUCT CONNECTION

(1) Cut off the knockout hole on the side plate. Then, cut the inner insulation of the hole portion. **(Refer to Fig. 1)**

(2) Adhere the insulation for opening of unit to the opening. **(Refer to Fig. 2)**

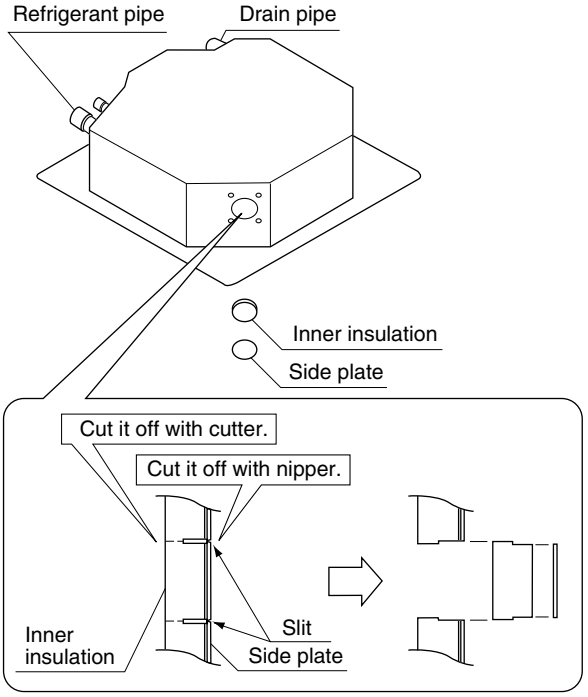


Fig. 1

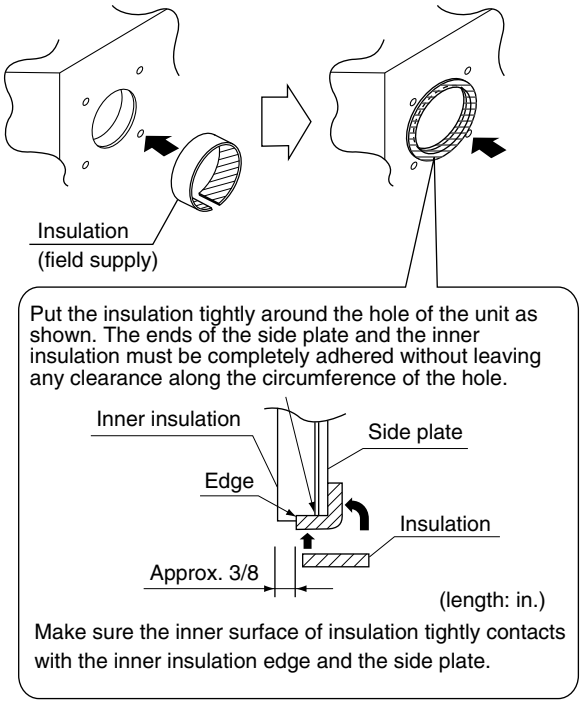

Insulation
(field supply)
Put the insulation tightly around the hole of the unit as shown. The ends of the side plate and the inner insulation must be completely adhered without leaving any clearance along the circumference of the hole.
Inner insulation
Side plate
Edge
Insulation
Approx. 3/8
(length: in.)
Make sure the inner surface of insulation tightly contacts with the inner insulation edge and the side plate.

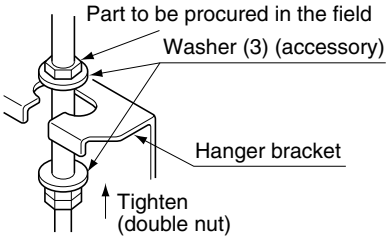
Fig. 2

6. INDOOR UNIT INSTALLATION

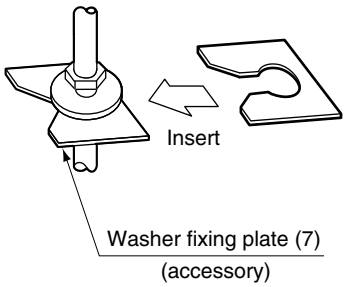
Installing optional accessories (except for the decoration panel) before installing the indoor unit is easier. However, for existing ceilings, install fresh air inlet component kit and branch duct before installing the unit.

(1) Install the indoor unit temporarily.

- Attach the hanger bracket to the suspension bolt. Be sure to fix it securely by using a nut and washer from the upper and lower sides of the hanger bracket.
  The washer fixing plate (7) will prevent the washer from falling.



[Securing the hanger bracket]

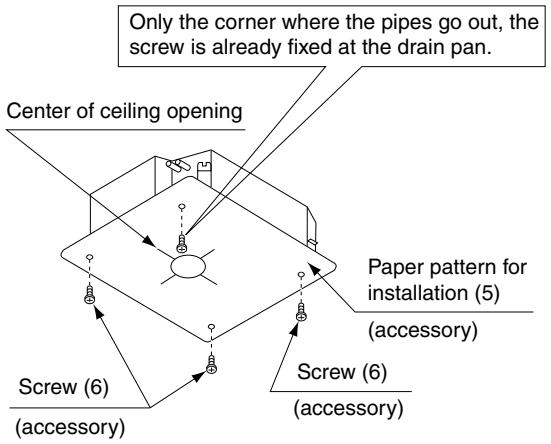


[Securing the washer]

6-1 For new ceilings

(2)

- Refer to the paper pattern for installation (5) for ceiling opening dimension.
  Consult the builder or carpenter for details.
- The center of the ceiling opening is indicated on the paper pattern for installation.
  The center of the unit is indicated on the label attached to the unit and on the paper pattern for installation.
- After removing the packaging material from the 4 corners of the paper pattern for installation (5), fix the paper pattern to the unit with screws (6) (×4).
- Ceiling height is shown on the side of the paper pattern for installation (5). Adjust the height of the unit according to this indication.


Only the corner where the pipes go out, the screw is already fixed at the drain pan.
Center of ceiling opening
Paper pattern for installation (5)
(accessory)
Screw (6)
(accessory)
Screw (6)
(accessory)

〈**Ceiling work**〉

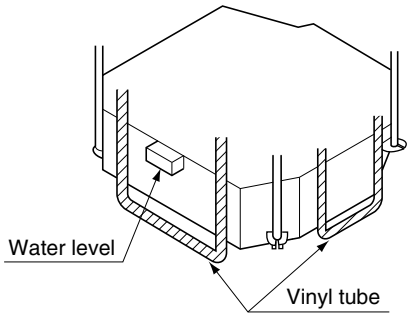
(3) Adjust the unit to the right position for installation. (Refer to "**PREPARATIONS BEFORE INSTALLATION-(1)**".) (Page 4)

(4) Check the unit is horizontally level.

- **The indoor unit is equipped with a built-in drain pump and float switch. At each of the unit's 4 corners, verify that it is level by using a water-level or a water-filled vinyl tube.**
  (If the unit is inclined against condensate flow, the float switch may malfunction and cause water to drip.)

(5) Remove the washer fixing plate (7) used for preventing the washer from falling and tighten the upper nut.

(6) Remove the paper pattern for installation (5).



6-2 For existing ceilings

(2) Adjust the height and position of the unit. (Refer to "**PREPARATIONS BEFORE INSTALLATION-(1)**".)

(3) Perform steps **(4)**, **(5)** in "**6-1 For new ceilings**".

7. REFRIGERANT PIPING WORK

7-1 GENERAL INSTRUCTIONS

- For refrigerant pipe of outdoor units, see the installation manual attached to the outdoor unit.
- Before refrigerant piping work, check which type of refrigerant is used. Proper operation is not possible if the types of refrigerant are not the same.
- The outdoor unit is charged with refrigerant.

⚠ DANGER

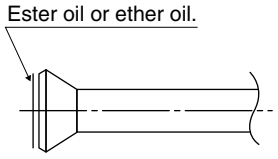
- Refrigerant gas may produce toxic gas if it comes in contact with fire such as from a fan heater, stove or cooking device. Exposure to this gas could cause severe injury or death.

⚠ NOTE

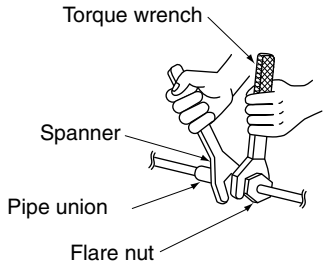
- Use a pipe cutter and flare suitable for the type of refrigerant.
- To prevent dust, moisture or other foreign matter from infiltrating the tube, either pinch the end or cover it with tape.
- Do not allow anything other than the designated refrigerant to get mixed into the refrigerant circuit, such as air, etc. If any refrigerant gas leaks while working on the unit, ventilate the room thoroughly right away.

7-2 Connecting the refrigerant pipe

- When connecting the flare nut, coat the flare with ester oil or ether oil and initially tighten by hand 3 or 4 turns before tightening firmly.

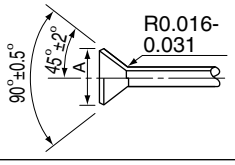


- To prevent flare nut cracking and gas leaking, be sure to use both a spanner and torque wrench together, as shown in the drawing below, when connecting or disconnecting pipes to/from the unit.



- Refer to the Table 3 for the dimensions of flare shape.
- Refer to the Table 3 to determine the proper tightening torque.

Table 3

Pipe size (in.)	Tightening torque (ft.lbf)	Flare dimensions A (in.)	Flare shape (in.)
ϕ 3/8	24.1-29.4	0.504-0.520	
ϕ 5/8	45.6-55.6	0.760-0.776	

⚠ NOTE

- Apply ester oil or ether oil around the flare portions before connecting.
- The flare nuts used must be those included with the main body.
- Over-tightening may damage the flare and cause a refrigerant leakage.

Not recommended but in case of emergency

You must use a torque wrench but if you are obliged to install the unit without a torque wrench, you may follow the installation method mentioned below.

After the work is finished, make sure to check that there is no gas leak.

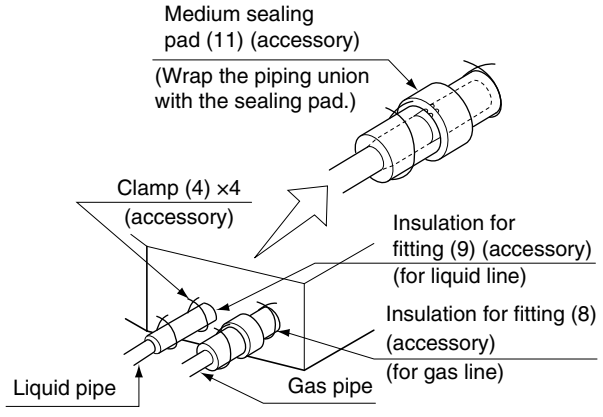
When you keep on tightening the flare nut with a spanner, there is a point where the tightening torque suddenly increases. From that position, further tighten the flare nut the angle shown below:

Table 4

Pipe size (in.)	Further tightening angle	Recommended arm length of tool (in.)
ϕ 3/8	60 to 90 degrees	Approx. 7 7/8
ϕ 5/8	30 to 60 degrees	Approx. 11 13/16

7-3 Piping insulation

- Execute heat insulation work completely on both sides of the gas pipe and the liquid pipe. Otherwise, a water leakage can result sometimes.
- The temperature of the gas pipe can reach up to approximately 250°F, so use insulation which is sufficiently resistant.
- Also, in cases where the temperature and humidity of the refrigerant pipe sections might exceed 86°F or RH80%, reinforce the refrigerant insulation. (13/16 in. or thicker) Condensate may form on the surface of the insulating material.
- Check the pipe connector for gas leaking, then insulate it as shown in the drawing below.
- Make absolutely sure to execute heat insulation works on the pipe-connecting section after checking gas leakage by thoroughly studying the following figure and using the attached heat insulating materials for fitting. (Fasten both ends with the clamps (accessory).)
- Wrap the sealing pad (accessory) only around the insulation for the joints on the gas pipe side.

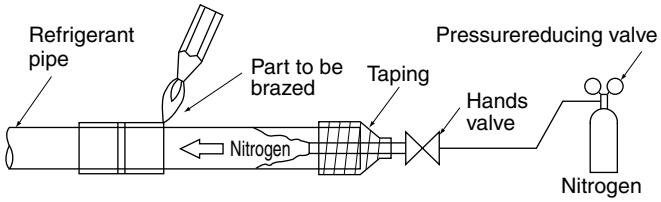


⚠ CAUTION

- Be sure to insulate any field piping all the way to the piping connection inside the unit. Any exposed pipe may cause condensate or burns if touched.

7-4 Brazing refrigerant piping

- Before brazing local refrigerant pipe, nitrogen gas shall be blown through the pipe to expel air from the pipe.
  If your brazing is done without nitrogen gas blowing, a large amount of oxide film develops inside the pipe, and could cause system malfunction.
- When brazing the refrigerant pipe, only begin brazing after having carried out nitrogen substitution or while inserting nitrogen into the refrigerant pipe. Once this is done, connect the indoor unit with a flared or a flanged connection.
- Nitrogen should be set to 2.9psi. with a pressure-reducing valve if brazing while inserting nitrogen into the pipe.



⚠ DANGER

- Use of oxygen may cause an explosion resulting in serious injury or death. Only use nitrogen gas.

⚠ NOTE

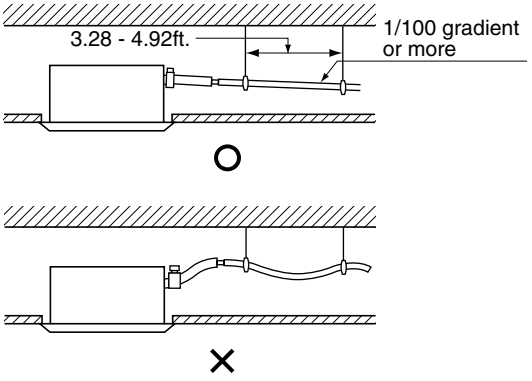
- Do not use flux when brazing refrigerant pipe. Therefore, use the phosphor copper brazing filler metal (BCuP) which does not require flux.
  (Flux has an extremely negative effect on refrigerant piping systems. For instance, if chlorine based flux is used, it will cause pipe corrosion. If the flux contains fluorine, it will damage the refrigerant oil.)

8. DRAIN PIPING WORK

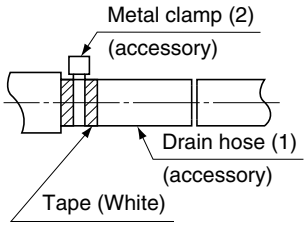
〈〈**Rig the drain pipe as shown below and take measures against condensate. Improperly rigged pipe could lead to leak and eventually wet furniture and belongings.**〉〉

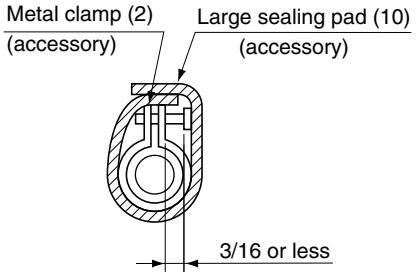
(1) Rig drain pipe

- The diameter of the drain pipe should be greater than or equal to the diameter of the connecting pipe (vinyl tube; pipe size: 1 in.; outer dimension: 1 1/4 in.). (This does not apply to rise.)
- Keep the drain pipe short and sloping downwards at a gradient of at least 1/100 to prevent air pockets from forming.
- If the drain pipe cannot be sufficiently set on a slope, execute the drain raising pipe.
- To keep the drain pipe from sagging, space hanging wires every 3.28 ~ 4.92ft.



- Use the attached drain hose (1) and metal clamp (2). Insert the drain hose into the drain socket, up to the white tape. Tighten the clamp until the screw head is less than 3/16 in. from the hose.
- **Be sure to insulate the 2 below indicated spots. If uninsulated, there is always the possibility of condensate forming and leaking.**
  - The drain pipe inside the building
  - Drain socket
- Wrap the attached sealing pad (10) (Large) over the clamp and drain hose to insulate, as shown in the drawing below.

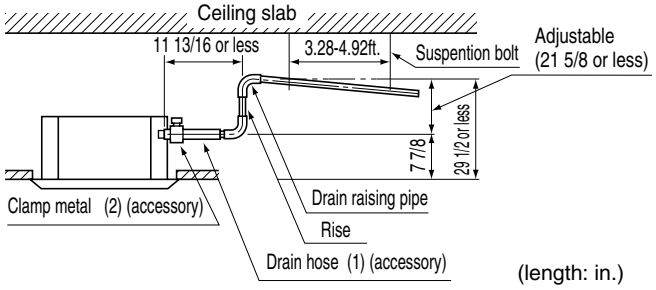




(length: in.)

〈**NOTE FOR DRAIN RAISING PIPE**〉

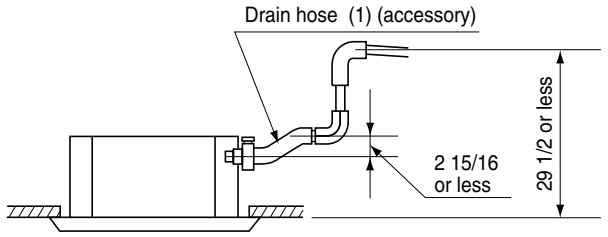
- Install the drain raising pipe at a height of less than 21 5/8 in.
- Install the drain raising pipe at a right angle to the indoor unit and no more than 11 13/16 in. from the unit.



(length: in.)

⚠ NOTE

- The incline of attached drain hose (1) should be 2 15/16 in. or less so that the drain socket does not have to stand additional force.



Select converging drain pipe whose gauge is suitable for the operating capacity of the unit.

- Drain pipe connections
  Do not connect the drain pipe directly to sewage pipes that smell of ammonia. The ammonia in the sewage might enter the indoor unit through the drain pipe and corrode the heat exchanger.
- Keep in mind that it will become the cause of getting drain pipe blocked if water collects on drain pipe.

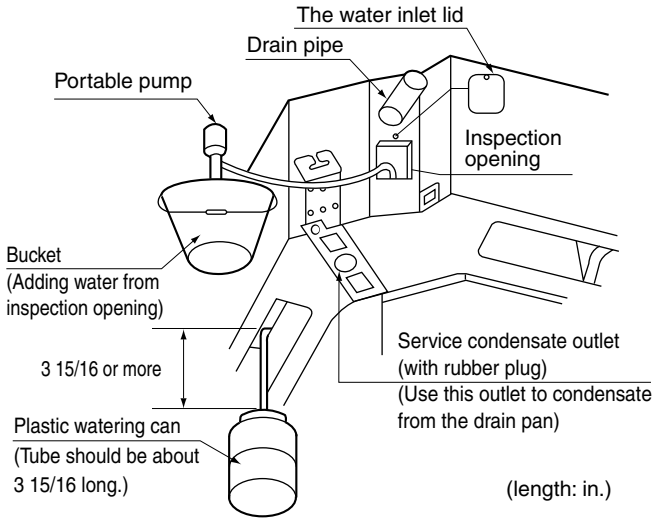
(2) After piping work is finished, check if drainage flows smoothly.
  - Open the water inlet lid, add approximately 37 in³ of water slowly and check drainage flow.

WHEN ELECTRIC WIRING WORK IS FINISHED

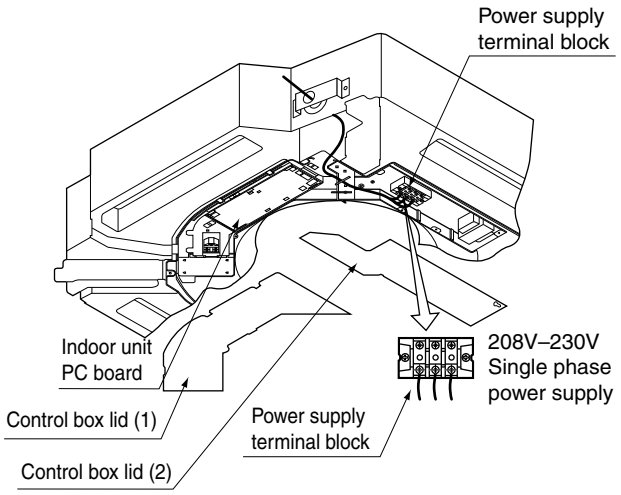
- Check drainage flow during COOL running, explained under "TEST OPERATION".

WHEN ELECTRIC WIRING WORK IS NOT FINISHED

- Remove the control box lids, connect a power supply wire and remote controller wire to the terminals.
  (Refer to the "HOW TO CONNECT WIRES" (Page 10))
  Next, press the INSPECTION/TEST OPERATION button "TEST" on the remote controller. The unit will engage the test operation mode. Press the OPERATION MODE SELECTOR button "" until selecting FAN SPEED CONTROL button "". Then, press the ON/OFF button "⏻". The indoor unit fan and drain pump will start up. Check that the water has drained from the unit. Press "TEST" to go back to the first mode.



〈 Adding water through air discharge outlet 〉
[Method of adding water]



9. ELECTRIC WIRING WORK

9-1 GENERAL INSTRUCTIONS

- All field supplied parts and materials, electric works must conform to local codes.
- Use copper wire only.
- Follow the "WIRING DIAGRAM" attached to the unit body to wire the outdoor unit, indoor unit and the remote controller. For details on hooking up the remote controller, refer to the "INSTALLATION MANUAL OF REMOTE CONTROLLER".
- All wires must be performed by an authorized electrician.
- A circuit breaker capable of shutting down the power supply to the entire system must be installed.
- Be sure to ground the air conditioner.

⚠ DANGER

- Do not ground units to water pipes, telephone wires or lightning rods because incomplete grounding could cause a severe shock hazard resulting in severe injury or death, and to gas pipes because a gas leak could result in an explosion which could lead to severe injury or death.

9-2 ELECTRICAL CHARACTERISTICS

Units				Power supply		Fan motor	
Model	Hz	Volts	Voltage range	MCA	MFA	KW	FLA
FCQ18PVJU	60	208-230V	Max. 253 Min. 187	1.3	15	0.09	1.0
FCQ24PVJU				1.3	15	0.09	1.0
FCQ30PVJU				1.3	15	0.09	1.0

MCA: Min. Circuit Amps (A) MFA: Max. Fuse Amps (A)
KW: Fan Motor Rated Output (kW) FLA: Full Load Amps (A)

9-3 SPECIFICATIONS FOR FIELD SUPPLIED FUSES AND WIRES

Model	Power supply wiring		Transmission wiring	
	Field fuses ⊟	Size	Wire	Size
FCQ18PVJU FCQ24PVJU FCQ30PVJU	15A	Wire size must comply with local codes.	Sheathed wire (2 wires)	AWG 18-16

Allowable length of transmission wire and remote controller wire are as follows.

(1) Outdoor unit – Indoor unit:
Max. 3280 ft.

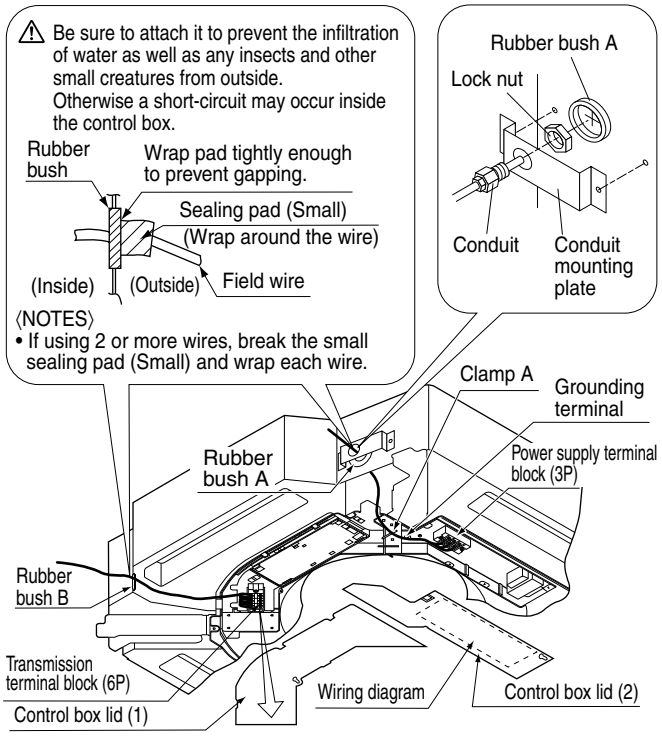
(2) Indoor unit – Remote controller:
Max. 1640 ft.

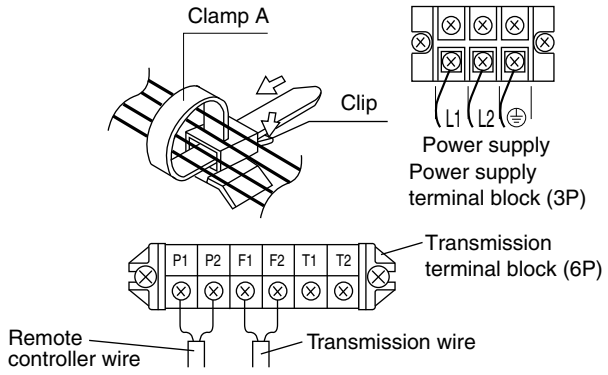
10. WIRING EXAMPLE AND HOW TO SET THE REMOTE CONTROLLER

10-1 HOW TO CONNECT WIRES

〈**Methods of wiring power supply, units and connecting remote controller wires**〉

- Power supply wire
  Remove the control box lid (2) and connect wires to the power supply terminal block (3P) inside. In doing this, pull the wires inside through rubber bush A and clamp the wires along with other wires using clamp A, untightening the clip of clamp A by pressing. After the connection, tighten clamp A as before.
- Transmission wire and remote controller wire
  Remove the control box lid (1) and pull the wires inside through rubber bush B and connect to the transmission terminal block (6P).
- After connection, attach sealing pad
  (Be sure to attach it to prevent water from infiltrating the unit from the outside.)


⚠ Be sure to attach it to prevent the infiltration of water as well as any insects and other small creatures from outside.
Otherwise a short-circuit may occur inside the control box.
Rubber bush
Wrap pad tightly enough to prevent gapping.
Sealing pad (Small)
(Wrap around the wire)
(Inside)
(Outside)
Field wire
〈NOTES〉
• If using 2 or more wires, break the small sealing pad (Small) and wrap each wire.
Rubber bush A
Lock nut
Conduit
Conduit mounting plate
Clamp A
Grounding terminal
Power supply terminal block (3P)
Rubber bush A
Rubber bush B
Transmission terminal block (6P)
Control box lid (1)
Wiring diagram
Control box lid (2)



⚠ CAUTION

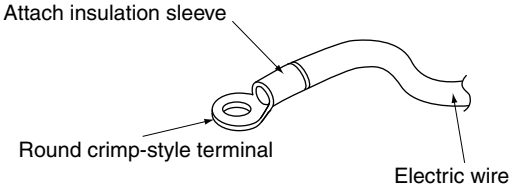
- Even if the control box lid (1)(2) is removed, pull the remote controller wire, transmission wire and the power supply wire inside the unit so that the wires do not come into contact with the opening section of the metal casing.
- Pass conduits through the wall and secure along with the refrigerant pipe in order to prevent external pressure being applied to transmission wire and power supply wire.
- Arrange the wires and fix a lid firmly so that the lid does not float during wiring work.
- Do not clamp remote controller wire and transmission wire together with power supply wire. Doing so may cause malfunction.
- Remote controller wire, transmission wire and power supply wire should be located at least 5 in. from other electric wires. Not following this guideline may result in malfunction due to electrical noise.

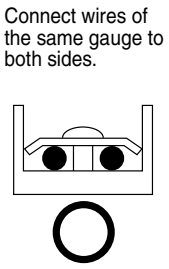
⚠ WARNING

- Never connect power supply wiring to the terminal block for remote controller wiring as this could damage the entire system.
- Use only specified wire and connect wires to the terminal tightly. Be careful wires do not place external stress on terminals. Keep wires in neat order so as to not obstruct other equipment. Make sure that the electric box lid fits tightly. Incomplete connections could result in overheating and, in worse case, result in electric shock or fire.

⚠ NOTE

1. Use round crimp-style terminals for connecting wires to the power supply terminal block.
   If unavailable, observe the following points when wiring.
   - Do not connect wires of different gauge to the same power supply terminal.
     (Looseness in the connection may cause overheating.)





2. Tightening torque for the terminal screws.
   - Use the correct screwdriver for tightening the terminal screws. If the blade of screwdriver is too small, the head of the screw might be damaged, and the screw will not be properly tightened.
   - If the terminal screws are tightened too hard, screws might be damaged.
   - Refer to the table below for the tightening torque of the terminal screws.

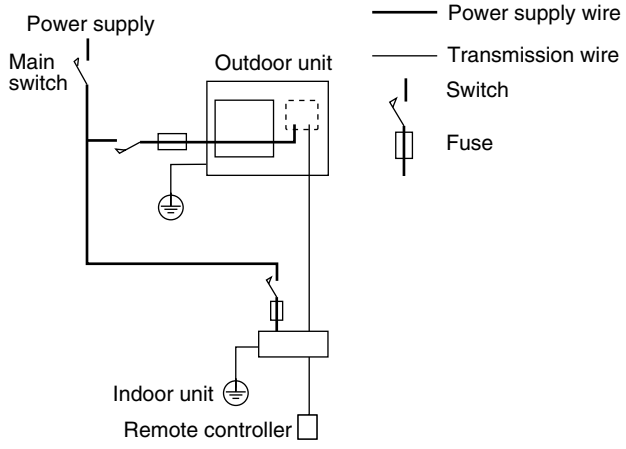
Terminal	Size	Tightening torque (ft.lbf)
Transmission terminal block (6P)	M3.5	0.58 - 0.72
Power supply terminal block (3P)	M4	0.87 - 1.06

3. Do not connect wires of different gauge to the same ground terminal. Looseness in the connection may deteriorate protection.
4. Outside of the unit, keep transmission wire at least 5 in. away from power supply wire. The equipment may malfunction if subjected to electrical (external) noise.
5. For remote controller wire, refer to the “INSTALLATION MANUAL OF REMOTE CONTROLLER” attached to the remote controller.

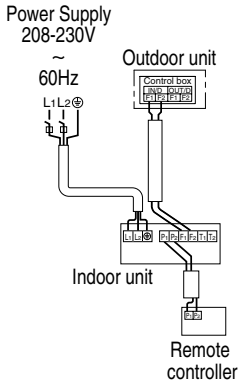
10-2 WIRING EXAMPLE

- Fit the power supply wire of each unit with a switch and fuse as shown in the drawing.

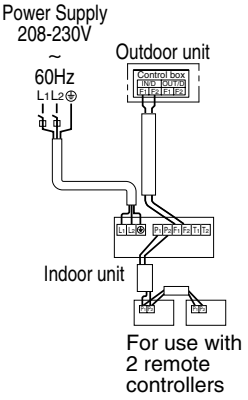
COMPLETE SYSTEM EXAMPLE



1. When using 1 remote controller for 1 indoor unit. (Normal operation)



2. When using 2 remote controllers for 1 indoor unit.



⚠ NOTE

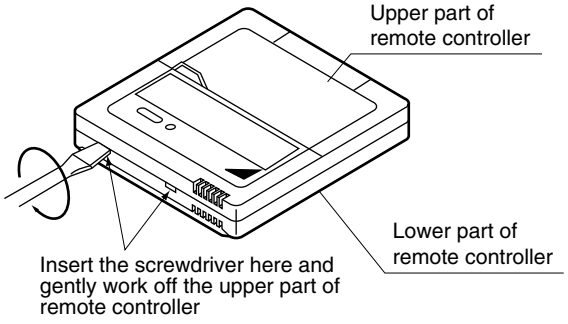
1. A single switch can be used to supply power to units on the same system. However, branch switches and branch circuit breakers must be selected carefully.
2. Do not ground the equipment on gas pipes, water pipes or lightning rods, or crossground with telephones. Improper grounding could result in electric shock.

10-3 CONTROL BY 2 REMOTE CONTROLLERS (Controlling 1 indoor unit by 2 remote controllers)

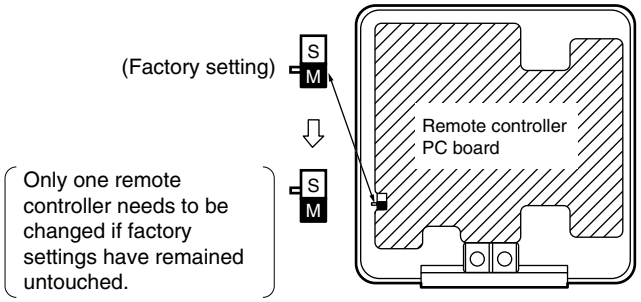
- When using 2 remote controllers, one must be set to “MAIN” and the other to “SUB”.

MAIN/SUB CHANGEOVER

(1) Insert a ⊖ screw driver into the recess between the upper and lower part of remote controller and, working from the 2 positions, pry off the upper part.
The remote controller PC board is attached to the upper part of remote controller.



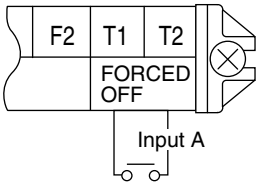
(2) Turn the MAIN/SUB changeover switch on one of the two remote controllers PC boards to “S”.
(Leave the switch of the other remote controller set to “M”.)



10-4 COMPUTERISED CONTROL (FORCED OFF AND ON/OFF OPERATION)

See “FIELD SETTING” on page 12 for local settings.

(1) Wire specifications and how to perform wiring
- Connect the input from outside to terminals T1 and T2 of the transmission terminal block.



Wire specification	Sheathed vinyl wire or cable (2 wires)
Gauge	AWG 18-16
Length	Max. 328ft.
External terminal	Contact that can ensure the minimum applicable load of 15V DC, 10mA.

(2) Actuation
- The following table explains FORCED OFF and ON/OFF OPERATIONS in response to Input A.

FORCED OFF	ON/OFF OPERATION
Input “ON” stops operation (impossible by remote controllers.)	Input OFF → ON turns ON unit.
Input OFF enables control by remote controller.	Input ON → OFF turns OFF unit.

(3) How to select FORCED OFF and ON/OFF OPERATION
- Turn the power on and then use the remote controller to select operation.

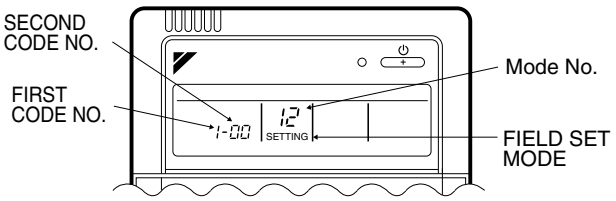
10-5 CENTRALIZED CONTROL

- For centralized control, it is necessary to designate the group No. For details, refer to the manual of each optional controllers for centralized control.

11. FIELD SETTING

Make sure the control box lids are closed on the indoor and outdoor units.
Field setting must be made from the remote controller in accordance with the installation condition.

- Setting can be made by changing the “Mode No.”, “FIRST CODE NO.”, and “SECOND CODE NO.”.
- For setting and operation, refer to the “FIELD SETTING” in the installation manual of the remote controller.



- Set the remote controller to the field set mode. For details, refer to the “HOW TO SET IN THE FIELD”, in the remote controller manual.
- When in the field set mode, select mode No. 12, then set the first code (switch) No. to “1”. Then set second code (position) No. to “01” for FORCED OFF and “02” for ON/OFF OPERATION. (FORCED OFF at factory set)

SETTING AIR FILTER SIGN

- Remote controllers are equipped with liquid crystal display air filer signs to display the time to clean air filters.
- Change the SECOND CODE NO. according to Table 5 depending on the amount of dirt or dust in the room. (SECOND CODE NO. is factory set to “01” for filter contamination-light)

Table 5

Setting	Spacing time of display air filter sign (long life type)	Mode No.	FIRST CODE NO.	SECOND CODE NO.
Air filter contamination-light	Approx. 2500 hrs	10 (20)	0	01
Air filter contamination-heavy	Approx. 1250 hrs			02

〈**When using wireless remote controllers**〉

- When using wireless remote controllers, wireless remote controller address setting is necessary. Refer to the installation manual attached to the wireless remote controller for setting instructions.

12. INSTALLATION OF THE DECORATION PANEL

Refer to the installation manual attached to the decoration panel.
After installing the decoration panel, ensure that there is no space between the unit body and decoration panel.

13. TEST OPERATION

Refer to the section of "FOR THE FOLLOWING ITEMS, TAKE SPECIAL CARE DURING CONSTRUCTION AND CHECK AFTER INSTALLATION IS FINISHED." on page 3.

- Make sure if the service lids are closed on the indoor and outdoor units.
- After finishing the construction of refrigerant pipe, drain pipe and electric wire, conduct the check operation referring to the installation manual of the outdoor unit.
- The operation lamp of the remote controller will flash when a malfunction occurs. Check the malfunction code on the liquid crystal display to identify the point of trouble. An explanation of malfunction codes and the corresponding trouble is provided in the installation manual of the outdoor unit.
  If any of the items in Table 6 are displayed, there may be a problem with the wiring or power, so check the wiring again.

Table 6

Remote control display	Content
" [ ] " (under centralized control) is lit up.	• There is a short circuit at the FORCED OFF terminals (T1, T2)
"U4" is lit up "UH" is lit up	• The power on the outdoor unit is off. • The outdoor unit has not been wired for power supply. • Incorrect wiring for the transmission wiring and / or FORCED OFF wiring. • The transmission wiring is cut.
No display	• The power on the indoor unit is off. • The indoor unit has not been wired for power supply. • Incorrect wiring for the remote controller wiring, the transmission wiring and / or the FORCED OFF wiring. • The remote controller wiring is cut.

- If "U3" is lit up, the malfunction code shows the check operation has not been performed yet.

13-1 TEST OPERATION

(1) Make sure if the gas side and the liquid side stop valves are open.
(2) Electrify crank case heater for 6 hours.
(3) Confirm function of unit according to the operation manual.

⚠ NOTE

- Refer to the diagnoses below if the unit does not operate properly.

13-2 CAUTIONS FOR SERVICING

With the power on. Troubles can be monitored on the remote controller or the LED's on the PC board of the indoor unit.

■ Trouble shooting with the display on the liquid crystal display remote controller.

(1) With the wired remote controller. (NOTE 1)
When the operation stops due to trouble, operation lamp flashed, and "👁" and the Malfunction code are indicated on the liquid crystal display. In such a case, diagnose the fault contents by referring to the table on the Malfunction code list it case of group control, the unit No. is displayed so that the indoor unit no with the trouble can be recognized. (NOTE 2)

(2) With the wireless remote controller.
(Refer also to the operation manual attached to the wireless remote controller)
When the operation stops due to trouble, the display on the indoor unit flashes. In such a case, diagnose the fault contents with the table on the Malfunction code list looking for the Malfunction code which can be found by following procedures. (NOTE 2)
(1) Press the INSPECTION /TEST OPERATION button, "👁" is displayed and " 0 " flashes.
(2) Press the PROGRAMMING TIME button and find the unit No. which stopped due to trouble.
Number of beeps 3 short beeps Perform all the following operations
1 short beep Perform (3) and (6)
1 long beep No trouble
(3) Press the OPERATION MODE SELECTOR button and upper figure of the Malfunction code flashes.
(4) Continue pressing the PROGRAMMING TIME button unit it makes 2 short beeps and find the upper code.
(5) Press the Operation selector button and lower figure of the Malfunction code flashes.
(6) Continue pressing the PROGRAMMING TIME button unit it makes a long beep and find the lower code.
• A long beep indicate the Malfunction code.

NOTE)

1. In case wired remote controller. Press the INSPECTION / TEST OPERATION button on remote controller, "👁" starts flashing.
2. Keep down the ON/OFF button for 5 seconds or longer in the inspection mode and the above trouble history disappears, after the trouble code goes on and off twice, followed by the code " 00 "(normal).
   The display changes from the inspection mode to the normal mode.

13-3 MALFUNCTION CODE LIST

- For places where the Malfunction code is left blank, the "👁" indication is not displayed. Though the system continues operating, be sure to inspect the system and make repairs as necessary.
- Depending on the type of indoor or outdoor unit, the malfunction code may or may not be displayed.

Code	Malfunction/Remarks
A1	Indoor unit's PC board faulty
A3	Drain water level abnormal
A6	Indoor fan motor overloaded, overcurrent or locked.
A7	Air flow direction adjust motor is fault.
A9	Drive for electronic expansion valve is fault.
AJ	Type set improper
	Capacity data is wrongly preset. Or there is nothing programmed in the data hold IC.
C4	Sensor R2T for heat exchanger temperature is fault.
C5	Sensor R3T for heat exchanger temperature is fault.
C9	Sensor R1T for suction air temperature is fault.
CJ	Sensor for remote controller is fault.
	The remote controller thermistor does not function, but the system thermo run is possible.
E3	High pressure abnormal (outdoor unit)
E4	Low pressure abnormal (outdoor unit)

E5	Compressor motor lock malfunction
E7	Outdoor fan motor lock malfunction Outdoor fan instantaneous overcurrent malfunction
E9	Electronic expansion valve faulty (outdoor unit)
F3	Discharge pipe temperature abnormal (outdoor unit)
F6	The refrigerant is overcharged.
H9	Outdoor air thermistor faulty (outdoor unit)
J3	Discharge pipe thermistor faulty (outdoor unit)
J5	Suction pipe thermistor faulty (outdoor unit)
J6	Heat exchanger thermistor faulty (outdoor unit)
J9	Sensor for heat exchanger is fault.
JA	Sensor for high pressure is fault.
JC	Sensor for low pressure is fault.
L4	Overheated heat-radiating fin (outdoor unit)
	Inverter cooling defect.
L5	Instantaneous overcurrent (outdoor unit)
	Possible earth fault or short circuit in the compressor motor.
L8	Electric thermal (outdoor unit)
	Possible electrical overload in the compressor or cut line in the compressor motor.
L9	Stall prevention (outdoor unit)
	Compressor possibly locked.
LC	Transmission malfunction between the outdoor control units' inverters (outdoor unit)
P1	Open-phase (outdoor unit)
P3	PC board temperature sensor malfunction (outdoor unit)
P4	Heat-radiating fin temperature sensor malfunction (outdoor unit)
PJ	Type set improper (outdoor unit)
	Capacity data is wrongly preset. Or there is nothing programmed in the data hold IC.
U0	Suction pipe temperature abnormal
U2	Power source voltage malfunction
	Includes the defect in K1M.
U3	The check operation has not performed.
U4 UF	Transmission error (indoor unit – outdoor unit)
	Miswiring between indoor and outdoor units or malfunction of the PC board mounted on the indoor and the outdoor units. If UF is shown, the wire between the indoor and outdoor units is not properly wired. Therefore, immediately disconnect the power supply and correct the wire. (The compressor and the fan mounted on the outdoor unit may start operation independent of the remote controller operation.) The power is not supplied to outdoor unit.
U9	Same transmission for in / outdoor unit is fault.
UA	Miss setting for multi system
	Setting is wrong for selector switch of multi-system. (see switch SS2 on the main unit's PC board)

DAIKIN AC (AMERICAS), INC.
1645 Wallace Drive, Suite 110
Carrollton, TX 75006

info@daikinac.com
www.daikinac.com

DAIKIN INDUSTRIES, LTD.
Head office:
Umeda Center Bldg., 2-4-12, Nakazaki-Nishi,
Kita-ku, Osaka, 530-8323 Japan

Tokyo office:
JR Shinagawa East Bldg., 2-18-1, Konan,
Minato-ku, Tokyo, 108-0075 Japan

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